DOCUMENT RESUME

ED 088 023 CS 000 947

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TITLE Grapho-Linguistics: The Study of the Communicative Properties of Children's Drawings and Their Role in the Initial Acquisition of Writing and Reading Skills.
PUB DATE May 74
NOTE 26p.; Paper presented at the Annual Meeting of the International Reading Association (19th, New Orleans, May 1-4, 1974)

EDRS PRICE MF-$0.75 HC-$1.85
DESCRIPTORS *Art Expression; Associative Learning; *Beginning Reading; Child Development; *Language Development; *Reading Development; Reading Research; *Symbolism; Writing
IDENTIFIERS *Grapho Linguistics

ABSTRACT

The grapho-linguistic approach to teaching reading involves the labeling of self-initiated graphic images reinforced by the copying of the written labels, which helps the child to understand the transference of meaning from the object to its name to its written name. The best time to start labeling strategies is when the child draws recognizable images and demonstrates horizontality. A child who is actively trying to learn the signs attached to objects is demonstrating that he has discovered the symbolic function of the written word. After proving successful in Washington, D. C., the grapho-linguistic approach to teaching reading now appears to hold the greatest promise for laying a good reading foundation based on the following factors: (1) drawing comes as naturally to a child as walking, talking, and playing; (2) the child invests his drawings with meaning; (3) the child who is helped to realize that he can convert verbal images into graphic images is preparing himself to convert graphic images into alphabetic images or words; (4) since reading cannot take place until speech is converted into written symbols, then handwriting should be the intermediary step between drawing and reading; and (5) the drawing paper becomes the ideal medium whereby to effect this exchange. (HOD)

GRAPHO-LINGUISTICS:

THE STUDY OF THE COMMUNICATIVE PROPERTIES OF CHILDREN'S DRAWINGS AND THEIR ROLE IN THE INITIAL ACQUISITION OF WRITING AND READING SKILLS

A Research Report of an Innovative Program to Teach Reading to Disadvantaged Students

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INTRODUCTION

If writing had never been invented then reading problems would not exist. Therefore, a deeper study of the writing processes may lead to a better understanding of reading problems. Writing had its roots in the picture-making activity of man. If ancient man had never discovered that his drawings conveyed meaning to others as well as to himself, the earliest form of pictorial communication, picture-writing, may never have been born.

The ability to make pictures developed parallel with speech (as will be shown later), but written language did not develop until man had a well-defined and complex oral language. Thus, writing grew out of a synthesis of drawing and speaking; and drawing was the link between speaking and writing. The ancient Greeks did not separate the acts of drawing and writing; the Greek word graphein covers both activities.

This interaction between language and drawing is not surprising if one considers, as Piaget points out, that both are part of the symbolic function of the brain -- that function which makes possible the representation of a signified object, event, or conceptual scheme by means of a signifier or sign. Several behavior patterns fall under this representative or figurative ability of the mind, and all are based on the evocation of an object or event which is not present. This absent object may

be evoked through imitative play activities, mental images, graphic images, physical gestures, or verbal actions. These functions appear toward the end of a child's second year and increase in complexity through the sixth year when they are incorporated into more concrete operations which combine representation and abstract thinking.

The symbolic function gives rise to two kinds of instruments: symbols and signs. Both symbol and sign are forms of imitation, but in the case of the symbol the child is imitating an internal model; thus, symbols are individualistic and highly motivated. Children's drawings and paintings are an example of internally motivated symbols. Signs, on the other hand, are the result of imitations of ready-made external models and are conventional and collective. An example of these is spoken language. The child receives words through the medium of imitation but often fashions them to suit himself, as in his errors of overgeneralization of plural and past-tense forms like sheeps and buyed.

Because the child comes to school at an advanced symbolic stage of thought, a study was undertaken in the Washington, D.C. elementary schools with the purpose of discovering new reading materials and approaches which might approximate the child's internal thinking and which might also employ language and images more relevant and credible to disadvantaged children. Of all the aforementioned symbolic behaviors (mental images, symbolic play, imitation, and verbal

evocation), the graphic image is the only one which is not transitory or internalized. This image is tangible, recognizable, and measurable. Therefore, the Washington, D.C. study, also known as the Platt study, started out by scrutinizing the drawing activity and examining children's graphic images with the intention of utilizing them to improve reading skills. The study culminated in several findings:

1. Graphic images manifest progressive stages of development which correspond to a child's mental and physical stages of development.
2. Children use graphic images to supplement or replace verbal language.
3. Each image carries intense personal meaning for the child and this meaning becomes fixed and invariant like the simple drawings called characters in the Chinese language.
4. A child who assigns meaning to his images can be helped to transfer this meaning to words which correspond to his images.
5. The word vocabulary which can be derived from the visual vocabulary in a child's drawing should be the child's first reading words.
6. The acts of drawing and writing are interchangeable and mutually beneficial.
7. There is a symbiotic relationship between the drawing, writing, reading, speaking and listening processes.
8. The meshing of all these processes rightfully belongs to a new science which was named grapho-linguistics.

Before describing the grapho-linguistic method of teaching reading and writing skills, this paper will briefly discuss the biological and psychological similarities between these processes.

PARALLELS BETWEEN THE DEVELOPMENT OF ORAL LANGUAGE AND DRAWING

Every healthy member of a living species enters life with a repertoire of instinctive behaviors. No one has to teach a newborn baby to cry, to suck a nipple, or to close his fingers around an object thrust into his palm. These are innate reflexes or behavioral patterns. Speaking and drawing owe much to these innate behaviors. According to linguistic expert E. Lenneberg, graphic expert G. H. Luquet, and psychologist H. Eng, the spontaneous development of language and drawing may be biologically determined. The ability to make babbling sounds, to take the first tentative steps, and to make the first scribblings are innate competencies. If these competencies were not present, the organism could not advance in the operations of imitating, remembering, and representing; and without these latter capabilities it could not manage the operations of reading and writing.

Walking, talking, and drawing are natural processes in the sense that the child does not have to be taught them in the same way that he must be taught arithmetic. The human infant learns to walk, talk, and draw without systematic instruction or teachers as such. A child's earliest cooings and babblings contain all the sounds needed to talk all the languages in the world; as the child grows, he simply selects those sounds he needs to imitate the language spoken around him. Similarly, a child's earliest scribblings contain all the strokes and structures needed to write every alphabet in the world. Even the earliest patterns of running correspond to

early scribbling patterns -- forward, backward, and around.

THE DRAWING COMPONENTS OF GRAPHO-LINGUISTICS AND THEIR RELATIONSHIP TO LANGUAGE

In an analysis of children's drawings as products of the representative function of the brain, the graphic images should not be equated with adult art forms. Since the start of the twentieth century, adult artists have imitated children's art and as a result children's art has been appraised in adult terms. For the child, the art activity is largely a play activity and should be called picture-making play rather than art. Piaget describes it as that part of the symbolic function which lies midway between play and the mental image. Drawing resembles play in its pleasure and its intrinsic rewards while it resembles the mental image in its efforts to imitate the real thing, however incomplete these efforts may appear to adult eyes.

The following brief summaries of the stages of children's art comes from the researches of V. Lowenfeld and H. Eng.

Stage 1: Scribbling

The earliest scribblings grow out of the manipulation of some tool, be it a pencil, stick, or crayon, coming in contact with a surface on which the tool leaves a mark. When the child grasps the connection between the motions of the hand and the scribbled results, he begins

to derive pleasure from producing and repeating lines. At first these lines have no meaning and correspond to the first cooings of the child.

Stage 2: Controlled Scribbling

This stage witnesses the child's discovery that a shape reminds him of a familiar object and he names his scribbles; henceforth, scribbling takes on a different meaning. This advance is psychologically similar to the transition from meaningless babbling to naming objects. The child is showing that he is aware of the representational function of his scribbling. From this moment, the child draws with the intention of portraying something. At this stage, however, his verbal representations are more advanced than his graphic representations and there is little similarity in the scribbles to the object named. In this stage the child learns to close a line to form a circle or triangle or rectangle and his drawings become strongly geometric.

Stage 3: The Development of an Early Schema

At the start of this stage, a circle alone can represent a human. By age three or four, circles within a circle come to represent a face; two straight lines downward from this face represent legs. A circle with many downward or radiating lines represents an animal or the sun. A triangle is sufficient for a house. A

rectangle stands for "car" and the several circles floating around it rather than attached to it may be the wheels. The child in this stage shows the parts of an object juxtaposed around the object rather than coordinated into the whole. This happens because the child is in a psychological stage where he cannot consider more than one aspect of a subject or situation at a time. This inability to coordinate objects into a whole is due to the egocentricity of the child in the Piagetian meaning of that word. The "preoperational" and strongly "centered" child in a psychological and perceptual sense is evidenced by the drawing compositions of this stage. A child may draw his rudimentary head-feet figure in the center of the picture space and show a tree and a car above him and the sun below, which is not surprising considering that at this stage a child feels that the whole world revolves around himself. (See Plate I, page 8.)

Obviously the child who is at this perceptual stage cannot be asked to read because he could not see the relationship between letters and words or between words and meaning. The teaching of reading at this time could only be a form of conditioning and even the child who could be conditioned to recognize certain words would do so without understanding.

Stage 4: The Advanced Schema

Upon the examination of a child's drawing over a period of time, the

schema is seen to evolve from rudimentary scribbles to well conceptualized and recognizable images. During this period the drawing also evidences the transition from a "centered" to a "decentered" point of view. There is a marked improvement in the order and arrangement of objects in the picture. The trees, houses, and figures which formerly floated in Chagallian bliss become stabilized. There is a horizontal blue sky across the top of the page with a yellow sun closely associated to it. There may be a layer of horizontal birds or planes. The ground forms another horizontal layer as far away from the sky as the paper will permit. Trees, houses, flowers, animals, and people are all on a horizontal axis and all are anchored in a position perpendicular to the ground (or stand line). This form of spatial arrangement is so universal that this stage is often referred to as the skyline-groundline stage of development. This horizontal orientation, or horizontality, will have great influence on the child's ability to perceive horizontal type and horizontal writing. (See Plate II below.)

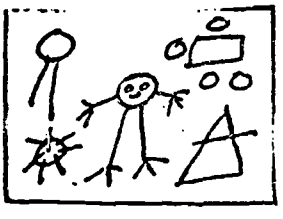

Plate I

Plate II

At this stage the child's images become subject to rules based on a visual logic that is not related to the adult visual logic known as perspective. For example, the leaning chimney is subject to the rule that objects must be shown perpendicular to their groundline, which in the case of the chimney is the oblique line of the roof. The same logic holds for trees leaning on diagonal hillsides and apples growing like lollipops around the circular groundline of a tree. These are childlike relationships but they exhibit the start of logical operations which can be used to determine readiness for advanced mental operations.

What are the cognitive agents promoting this growth in language and perception? Karl Buhler, one of the earliest researchers in this area (1931), uses this description:

> "Mental progress towards intelligible drawing may, like that from babbling to intelligible speech, take place in two somewhat distinct ways: either by the child discovering a known form in its own lines and being thereby stimulated to repeat them, or by its having learned the practice of making pictures by imitating others."

Theoretically, the child whose powers of representation have reached an intelligible level of horizontality is ready to tackle the tasks of writing and reading.

THE GRAPHIC IMAGE AS SYMBOL AND SIGN

The graphic image in the first four stages is not a real copy

of an object but a memory image of that object. Until nine or ten years of age a child draws what he knows about a person or object before he can draw what he actually sees. The images of the first four stages do not refer to a single object but to a group or class of objects. Each image is a generalization. The child does not draw a particular tree or person but a formula or schematized version of the tree or person. Many of the environmental features which recur in children's drawings at this stage are drawn with stenographic rapidity and with fewer variations than formerly. The image becomes compressed and monotonous and thus is reduced to no more than an abstract symbol.

During early speech the word doggy becomes a generic term for all four-legged animals, just as, pictorially, a "lollipop" tree is a standardized version of all growing things -- trees, flowers, and bushes. In his studies in language, Edward Sapir claims that "the world of experience must be greatly simplified and generalized before it can be converted into symbols. When this happens communication becomes possible." A child's drawing represents the conversion of experience into symbolic forms which also serve as communication. A child who evidences this symbolization ability may be on the brink of discovering the most primitive stage of true picture-writing. This discovery can be as important to the child as it was to the first man who discovered a written communication system!

This symbolization was verified through one thousand eight hundred children's crayon drawings collected during the Washington, D.C. study and led to the search for strategies to help children make these discoveries for themselves.

STRATEGIES TO AFFECT TRANSFERENCE FROM PICTURE SYMBOLS TO WORD SYMBOLS

The reading act cannot take place until speech is transformed into alphabetical symbols which must, then, be decoded by the reader. A child who can be helped to understand how he converted his ideas into picture symbols is one stage ahead in understanding how speech and ideas become converted into written symbols. An intermediate step to help a child arrive at these understandings would be a demonstration of how a picture-image can be transformed into a word-image. If this could be accomplished, then children might see that words do serve a purpose -- they tell a story faster than a picture does.

Three strategies with the purpose of finding a conversion process between drawing and language were used experimentally with inner-city children in the first grade. Each strategy evolved from the previous one. Initially, a dictated story, language experience approach was used. This was replaced by a more personal single sentence, also dictated by the teacher but written directly across the bottom of the child's drawing paper. But in both cases the

sentences the children invented were more complex than they could handle. The greatest success was experienced with the final strategy -- a one-word labeling procedure.

HOW TO USE A LABELING STRATEGY

Labeling used only as labeling can be a weak strategy if it is used simply for the acquisition of vocabulary through memorization without understanding, In the grapho-linguistic method, the labeling of self-initiated graphic images reinforced by the copying of the written labels was a vigorous ally in helping children understand the transference of meaning from the object to its name to its written name.

The best time to start labeling strategies is as soon as it has been determined that approximately 50% of the class is drawing recognizable images and demonstrating horizontality. In the Washington, D.C. study, a child who was centrally seated was selected for demonstration purposes, thus enabling other children to observe easily. A recognizable image on the child's paper, the sun, was singled out. The child was told that he had made a beautiful picture of the sun but there was also another way to make a picture that means "sun." This was called a word-picture and at the same moment the word sun was written beside the image. Essentially this was a labeling procedure but the use of the term word-picture introduced the novelty of words in a familiar and pleasurable

context. The child was asked to read the word-pictures back after each presentation and then in random order. The children accomplished this without difficulty.

The children in the program begged greedily for words. The words, which were written in crayon directly on the pictures, became so popular that impatient children began copying from each other's papers. The real breakthrough came when words began appearing spontaneously on the children's drawings without previous teacher models. Here is a tangible example of the imitation, accommodation, and assimilation that Piaget has observed -- the same processes, in fact, which the child had become familiar with in repetitive graphic images. Words were new acquisitions which by means of repetition could be assimilated easily.

Hence, it may be inferred that children who demonstrate the capacity to produce symbolic drawings are better prepared psychologically to accept and understand letter, sound, and word symbols than youngsters who have not been given opportunities to arrive at symbol extraction. Frequent drawing activities can help the child reach this goal.

Jerome Bruner, the Harvard psychologist, who is also working with the steps a child takes to arrive at a symbol system, characterizes the period of greatest representative thinking as between five and seven years of age. He calls this period the "iconic" period during which time the child is busily developing a symbol system

of his own.

SIGNIFICANCE OF LABELING

In the following paragraph, Bruner talks of the importance of verbal labeling:

> "The likelihood of a word's use in the child's early linguistic career is vastly increased if the object is either in hand or in direct sight. It is only gradually that words are used to stand for objects not present."

In the grapho-linguistic method, the drawn object substitutes for the real object and the written word substitutes for the oral word. L. Vygotsky, in his penetrating volume Thought and Language, quotes a statement of Stern: "The greatest discovery of a child's life is that each thing has its name. It is at that crucial instant that speech begins to serve intellect."

The current and deplorable state of reading begs for a similar fortuitous moment of insight when the child can discover not only that everything has a name and a sound-image, but also that everything has a written name-image. This name-image is the written word which carries the same meaning as its associated picture; or simply stated -- every object having a name also has a written name.

In the Washington, D.C. study this crucial instant of understanding was indicated by two unmistakable objective symptoms: (1.) the

children's sudden active curiosity about words and their acquisition of new unknown words and (2.) the resulting rapid increase in the children's written and spoken vocabulary. A child who is actively trying to learn the signs attached to objects is demonstrating that he has discovered the symbolic function of the written word -- that words communicate ideas quicker than drawings, and as a consequence the child is discovering why reading was invented in the first place.

THE COMPARISON OF WRITTEN AND SPOKEN LANGUAGE

Written language has played a secondary role to oral language in the area of reading instruction due in part to the lag between a child's speaking and his writing. A child is well advanced in speaking when he is just beginning to learn to write. Vygotsky's investigations disclosed the extent to which written speech differs from spoken speech in structure and mode of functioning:

> "Writing requires a high level of abstraction. Writing also lacks the musical, expressive and intonational qualities of oral speech. Writing is speech without an interlocutor, addressed to an absent or imaginary person or to no-one in particular, in a situation new and strange to a child. Writing requires deliberate analytical action on the part of the child. In speaking, a child is hardly conscious of the sounds he pronounces or the mental operations he performs, but in writing he must pay attention to the sound, dissect it and reproduce it in alphabetical symbols

which he must have studied and memorized beforehand."
In writing, the child is required to transfer from an auditory dimension into a visual-motor dimension. He must replace the word-sound with a word-image. It appears, then, to Vygotsky, that the main stumbling block to writing is the abstract quality of written language and not the underdevelopment of small muscles or mechanical and perceptual obstacles. In the face of all these pitfalls why did the children in the Washington, D.C. study write as spontaneously as they drew?

THE WRITING COMPONENTS OF GRAPHO-LINGUISTICS

Without having had formal instruction in handwriting and without laborious and mechanical exercises, the children nevertheless showed no problems with letter structure, directionality, or reversals. Was it because writing had been introduced as written art, thereby reducing its novelty and anxiety? Had the drawing activity prepared the child's muscles for the writing movements to come? Had the drawing technology made it possible for the child to accommodate old skills to new skills by doing the following?

1. The children used writing instruments which they were already familiar with through drawing -- crayons and drawing paper.
2. The children used names and images which they were thoroughly familiar with (e.g. -- sun, sky, tree, grass, house, flower).
3. The copying of single labeled words evidenced that alphabetic

writing was taking place in short steps and in context, rather than as isolated letters.

4. As stated earlier, children's drawings are a preparation for writing and contain all the contours needed to write all the alphabets in the world. These images have a strongly geometric character composed of horizontal, vertical, and diagonal segments of lines and circles, similar to the structures of the alphabet.

   The alphabet letters, it follows, are already in use by the drawing and scribbling child long before he can recognize them as letters. For example, his first drawn house is an A, house windows are H's and E's, faces are filled with O's, a mouth is a U, a nose an L, I, or V. J-curves appear in tree trunks; fingers and toes are E's, W's, or M's. Even the S-curve is found in hair and sky. The similarity between written and graphic language is no accident. Early iconography became the model for present day orthography.

THE CREATIVE WRITING OF STORIES

One of the most gratifying results of the grapho-linguistic approach was the explosive original writing the children started producing after two months. The labeling started with single nouns corresponding to the pictured images. This was followed shortly by the addition of modifiers because the colors the children used to draw their images were as stereotyped as the

images themselves. Soon after the introduction of the word sun, the words yellow sun were introduced, and thereafter the article the followed very naturally. Before long the youngsters had a stock of phrases at their disposal: the blue sky, the red apple, the green grass, etc. In this strongly visual approach to teaching reading, the verb see was a natural first; and, again, a long string of clauses such as See the tree and See the green tree came easily to the children.

By this time, requests for unfamiliar words became so numerous the teacher wrote them on the chalkboard. As she did so, she read their alphabetic components aloud. This strategy not only increased the children's oral and written vocabularies but taught the alphabet in a meaningful context rather than as an isolated skill. In fact, the spelling of words, which is not a required first-grade skill, became a popular game. One of the components of spelling skills is the retention of the mental image of a word. A game the children enjoyed was looking at a familiar word on the board, then closing their eyes but retaining the word-image in their heads, and finally writing the word on paper. The concept of one's head as a reservoir for word-images was quite new to the children.

As the words outgrew the drawing papers, lined writing paper was issued according to individual needs -- half sheets for some and whole sheets for others. A crayon soon proved too thick for the task and, again, a new tool with a smaller and finer point, a

pencil, was introduced when the children's needs rather than the teacher's decision indicated that the time had arrived. At all times, the drawings could be referred to for help with the written ideas.

Toward the close of the school year the youngsters' capacity to organize their thoughts in writing improved rapidly. Within an eight month period 100% of the students were composing original sentences. 50% were writing five or more sentences, 30% were covering two or more pages with original work, and 20% were writing two or more original sentences. Other first grades in the school not using a grapho-linguistic method produced few or no original writings at all.

THE USE OF ROLE-PLAYING IN THE GRAPHO-LINGUISTIC METHOD

Role-playing was a device introduced for experientially deprived children with the purpose of creating a common classroom vocabulary which could be shared by teacher and child alike. When children become personally involved in an experience, they feel more deeply, draw more vividly, and their range of words can be expanded. For example, the act-out "taking a walk in the park" will elicit a common vocabulary that can be used by all children. Words like bench, tree, squirrel, bird, water fountain, sun, and sky will appear graphically and semantically in their work. Role-playing is a form of pure play which stimulates gesture, movement, mimicry, and

vocalization -- all desperately needed by subverbal children. The benefits of role-playing, however, can be dissipated if it is not immediately reinforced by a drawing experience. On paper a child can assume all the roles and review their sequences in tranquillity. The opportunity of narrating a picture story will help the child make a smooth transition into sequential thinking and anecdotal writing and speaking.

READING COMPONENTS OF GRAPHO-LINGUISTICS

The word-pictures that the children requested to be written on their papers, and which they in turn copied, exposed the repetitive and stereotyped nature of their drawings more effectively than mere observation of the drawings had done. The recurrent words that were requested were words like sun, sky, tree, grass, house, flower, bird, and apple and all were accompanied by their equally stereotyped color modifiers -- yellow, blue, green, and red. Similar words were requested in poor as well as affluent neighborhoods. Within a period of several weeks of drawing and writing on the drawing papers, the first-graders in the study had acquired a sizable vocabulary which they were able to read from their own and from each other's papers. It was a vocabulary which had been self-selected; it was personal and relevant; it was associated with pleasure; and more importantly, it was fully comprehended because it is axiomatic that a child cannot draw what the child does not already know.

In spite of the fact that the children had amassed this extensive

vocabulary, none of it appeared in the first-grade reading texts or on word inventory lists or in achievment tests. It became incumbent to design a suitable testing instrument. This took the form of a book written around these familiar words and phrases. Seeing these words, even in a handmade book, accelerated the interest in reading.

USING THE INNOVATIVE TEXTBOOKS

The experiment started officially in September 1967 in three first-grade classrooms in the inner city of Washington, D.C. After a month of readiness drawing experiences, each classroom was ready to use the handmade books which were expanded to three books by the end of the school year. By that time a total of one hundred and ninety-three pages had been completely read by two reading groups in two classrooms. These youngsters had a formidable vocabulary which included most of the words in the Dolch 220 list; and these youngsters had also successfully made the transition into the second half of the Sheldon first reader.

The teachers who were using the grapho-linguistic methods and books for the first time noticed that with all the students, whether using the program or not, learning interest and reading motivation ran significantly higher than they had encountered in previous years of teaching. The handmade books were used for two years, but in 1971 Addison-Wesley Publishing Company's

school division (Menlo Park, California 94025) published four books and a teacher's manual which the classes started using September 1971. These classes were tested in the Metropolitan Readiness Tests in October 1971 and in the California Achievement Tests in June 1972. Results showed that in grade-equivalent (OGE) scores these two classes tested highest out of twenty first-grade classes -- in the 2.3 and 2.4 range. Truer figures could not be collected because the California Achievement Test did not include the unique art-oriented vocabulary of the control group, nor did the testing instrument offer any opportunities to assess the high caliber of the original writing of the control group. The results of the tests, however, in a school with 66% reading disability implied that reading had been discovered by the children not as a series of rote skills but as a series of understandings.

Several factors contributed to these understandings:

1. The labeling processes helped the children start with silent reading rather than vocal reading. A child who reads written phrases of his own making, silently, is less handicapped by the additional vocal actions of pronunciation and intonation, which are really not necessary for reading with speed and understanding.
2. A characteristic of reading which poses problems for youngsters is that the story to be read is about somebody else's experiences. This third person, the writer, must be identified if the child is to continue to read without confusion and with interest.

Children who are read to aloud at home can handle this psychological adjustment, but in the Washington, D.C. investigations it was shown that a deprived child has greater success if his first reading attempts are written by himself. Evidently, the ability to organize one's thoughts in writing is helpful for full comprehension of someone else's written thoughts -- which is what reading is all about.

3. The children were helped to respond to printed language in a natural manner as a result of the style of the books which start with the same telegraphic word-patterns as in early speech -- starting with single nouns and modifiers, then adding an article, verbs, demonstratives, and gradually, auxiliaries.

SUMMING UP

This report is a very modest step in exploring a new avenue for teaching beginning reading. At present there are four notational systems, words, numbers, notes and graphic images. The two latter had been relegated exclusively to the affective domains until the Washington, D.C. study brought art into the cognitive realm. It now appears that graphic images may hold the greatest promise for laying a good reading foundation based on the following factors:

1. Drawing comes as naturally to a child as walking, talking, and playing.

2. The child invests his drawings with meaning. This is one step in the total symbolization process (or representative function) which can be externally perceived by the child as well as the teacher.
3. The child who is helped to realize that he can convert verbal images into graphic images is preparing himself to convert graphic images into alphabetic images or words.
4. Since reading cannot take place until speech is converted into written symbols then handwriting should be the intermediary step between drawing and reading.
5. The drawing paper, it follows, becomes the ideal medium whereby to affect this exchange.
6. Existing curricula should be implemented using the grapho-linguistic methods described in this report.

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